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DISCOVERIES AND CURRENT EVENTS IN WORLD PHYTOPATHOLOGY

Canada : General Notes on Diseases recently recorded (1).

Tomato mosaic is fairly uniform in the Niagara peninsula ; in one planting 30-40 per cent. of the plants show infections.

Apple scab is a serious factor in many orchards.

Raspberry mosaic and leaf curl are appearing in a severe form at this time (August).

Rhizoctonia caused considerable injury in plantings of early potatoes.

Puccinia graminis is prevalent to a considerable extent in some sections of the hard, red, spring wheats. Cool nights keep down the development of this rust in Marquis wheat. Early sown Ruby is practically out of danger.

The eradication of barberry (*Berberis vulgaris*) throughout the Canadian West is practically completed.

Phytophthora blight of potatoes was observed in various localities in July.

The crops are unusually good and generally sound.

Belgian Congo : New or particularly interesting Diseases (2).

Colletotrichum sp. on the leaves of the silk cotton tree (*Eriodendron anfractuosum*) noted at Eala, Mongobèle and Mushie. The variety " Randoe Lanang " is very resistant.

Parodiella prisporioides on *Crotalaria retusa* in the experimental plots at Eala.

Sclerotium Rolfsii on *Crot. usaramoensis* and on *Crot. striata* in experimental plots at Eala.

(1) Communication from the official correspondent to the Institute, Mr. H. T. Güssow, Dominion Botanist, Central Experimental Farm, Ottawa.

(2) Communication from the official correspondent to the Institute, Dr. Pierre STANER, Director of the Mycological Laboratory at Eala.

Only *Crot. anagyroides* is unaffected by these two diseases.

Pestalozzia funerea var. *discolor* on *Cryptomeria* and *Araucaria* in the collections at Eala.

Bacillus phytophthorus or *Bac. caulivorus* and *Bac. Solanacearum* on potatoes at Eala.

Septoria Apii on celery at Eala.

It is to be remarked that the last three diseases are the same as attack these plants in Europe. It is therefore probable that they have been imported at the same time as the seeds.

Italy : Phytopathological Notes (1).

During August 1927, the " R. Osservatorio di Fitopatologia " of Turin has noted somewhat widespread bacteriosis of tomato fruits in Piedmont. The same disease has also been verified by the " R. Stazione di Patologia vegetale " of Rome on samples sent from Tuscany.

Serious attacks of *Stigmatea Mespili* on wild pear and quince have also been observed in Piedmont.

The greatest loss to the countryside has been due to hail and violent storms in northern Italy and to drought in southern Italy and along all the Adriatic coast.

Serb, Croat and Slovene State : A New Insect Pest in Dalmatia (2).

A new insect pest in Dalmatia is *Psila rosae* Fab. In the autumn of 1926 many carrot and celery plantations were attacked by the larvae of this insect, which bored holes in the underground parts of the stalks, thus completely destroying them.

In the early days of March 1927 the writer succeeded in breeding out the adult.

Switzerland : Plant Pests in Ticino, during the second Quarter of 1927 (3).

Vines. — Fairly vigorous attack of the beetle *Anomala oblonga* on vines on the right bank of the Ticino.

Horticultural Plants. — Reappearance of *Icerya purchasi* on horticultural plants in Ticino.

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(1) Communication from the " R. Stazione di Patologia vegetale di Roma ", official correspondent to the Institute.

(2) Communication from the official correspondent to the Institute, Mr. P. Novak, Chief of the Entomological Station, Split.

(3) Communication from the official correspondent to the Institute, Dr. H. Faes, Director of the " Station fédérale d'essais viticoles ", Lausanne.

VARIOUS QUESTIONS RELATING TO PLANT PROTECTION IN THE DIFFERENT COUNTRIES

Algeria : Swarms in Flight and Breeding Places of *Dociostaurus maroccanus* during the Month of July, 1927 (1).

1. — On the 7th July swarms in flight were observed at El Achir and at the M'Zita, Ouled Ali and Mansourah douars and at the boundary of Kessabia douar of M'Sila (Mixed Commune of Les Bibans).

2. — Breeding places were observed at the boundary of Les Bibans, at Ksour douar (Commune of Les Maadids) on 25 and 26 July. Considerable damage in gardens.

3. — Swarms in flight were noted in the El Morra, Taguedide, Meghnine, Oued Djenane, Serdoun and Béni Inthacen douars of the mixed Commune of Aumale, about 9 July. Fairly considerable damage was done to the crops.

4. — At Berthelot (Department of Oran) some very considerable swarms in flight came from Possénégre and Lemcen. About 15 hectares were occupied by the locusts which only did very little damage as the cereal crops had already been harvested. Only gardens suffered.

Attempts to destroy them with flame-projectors were made on large swarms.

5. — At the beginning of the month swarms in flight were noted at the place called " Kès-Kès " near the Tiaret-Aflou road (Mixed Commune of Aflou).

Guadeloupe : Crop Pests and Diseases (2).

I. — From the point of view of animal parasitology the crops of Guadeloupe, speaking generally, are not attacked by dangerous enough enemies to attract the attention of agriculturists. Our crops have never suffered from those formidable epidemics which reduce to nil the harvests of one or several years. They are rather subject to endemic evils causing a gradual daily deterioration in local production. The worst feature is that this condition leaves agriculturists indifferent ; they are satisfied with their poor return, and make no attempt to find the reason of their low production and to remedy it.

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(1) Communication from the Governor General of Algeria to the President of the International Institute of Agriculture.

(2) Communication from the official correspondent to the Institute, Mr. A. Buffon, Chief of the Agricultural Service of the Government of Guadeloupe and Dependencies, Basse-Terre.

Before dealing with our chief crops we propose to call attention to some of the enemies which attack most of our agricultural products.

Rats are a serious trouble throughout the country ; they attack nearly all our products, especially sugar-cane, cacao pods, coconut, maize, cotton bolls and cassava. In certain coconut plantations they destroy up to two thirds of the nuts. They have no serious enemy to act as a check. The mongoose which was introduced for the purpose does not seem to attack them effectively, preferring to look for more easily caught prey especially game.

The small " Iles des Saintes " suffered a serious invasion of locusts in 1926. The crops most affected were : maize, cotton, pigeon pea (*Cajanus indicus*), French beans. The loss suffered was considerable. The agricultural Service was only advised of the attack of the locusts long afterwards and could not establish to what species they belonged.

Certain ants do serious damage to crops, especially a great black ant which attacks nearly all underground tubers (sweet and ordinary potatoes, yams). Sometimes they are found round the roots of certain plants in large numbers without showing exactly what their effect has been. Again they often hollow out tunnels or enter those already made in the trunks and branches of trees. They attack certain fruits already pierced by other insects or by birds. Their seed eating propensities are often a source of serious annoyance to market gardeners.

Scale insects do serious damage to certain of our crops, especially to cotton, coffee, coconut, lemons and pigeon pea. They are often accompanied by ants and by " sooty mould " which increase their harmfulness.

Concise notes follow on our chief crop enemies.

Sugar Cane. — The chief enemy of sugar cane in Guadeloupe is the caterpillar of *Diatraea saccharalis*. Its attacks however have never been sufficiently widespread to ruin the whole harvest. Even on the big estates, which are generally kept in the best order, there are so many other causes of reduced crop that this particular one passes unnoticed.

D. saccharalis has here two recognized natural enemies : a Hymenopterous parasite of the eggs (probably *Trichogramma praetiosa*), and a *Cordiceps*, parasitic on the caterpillars.

Other insects harmful to sugar cane are : *Diaprepes abbreviatus* and *D. famelicus*, which we observed in pretty serious numbers round about Capesterre, and white root worms (*Cyclocephala*). *Pseudococcus calceolariae*, sometimes found in considerable quantities on the roots or in the leaf sheaths, does not seem to do serious damage.

Coffee. — The leaf miner (*Cemiostoma coffeella*) is always the most dangerous insect. Some landowners are beginning to show concern and are using snare-lamps for its control. Such a practice can only be really effective when it becomes general.

A plant-louse, a scale insect and certain ants are the most important enemies of the coffee plant.

Cacao. — Here and there attacks of *Steirastoma* are noticeable.

Banana. — Rather serious damage is done by a large white grub (*Ligyrus* ?) and sometimes by the attacks of *Sphenophorus*.

Cotton. — *Dysdercus delauneyi* is generally the worst enemy of cotton, though we did not find it in serious numbers either at La Désirade or at Les Saintes. In the last named locality cotton suffers very serious damage especially from a white scale insect. This chiefly attacks the old plants and badly developed shrubs. Proper plantation management already seems a most effective control measure.

Maize. — This crop is always affected by the caterpillars of *Laphygma frugiperda* and of *Diatraea saccharalis*. We sometimes found inside the bracts of the young cobs large colonies of associated insects including Dipterous larvae, numerous plant-lice, and ants.

Cassava. — Throughout Guadeloupe the cassava is attacked by a small caterpillar, which destroys the young terminal growths of the main stem and of the branches, but never seems to do very serious damage.

The caterpillars of Noctuae, which destroyed several dozen hectares of cassava in the neighbourhood of Capesterre in 1924, were not reported in 1926.

Market Gardening and various Crops. — The following have been noted by us : *Pieris virginica* on cabbage and radish ; *Protoparce sexta* on pepper and tomato ; *Chloridea virescens* on pigeon pea.

The last named suffers throughout the country from the attack of a scale insect. *Nezara viridula* seriously infests tomato leaves. The Jasmine tree is regularly infested at Basse-Terre by huge caterpillars of *Pseudosphinx tetrio*. We noted a case in which the roots of a papaw tree were attacked by a Nematode with consequent tuberosity formation of 1 cm. — 1.5 cm. in diameter. Sweet potatoes are seriously attacked by the caterpillar of a sphingid.

II. — The same general observations made regarding the entomological situation apply here also. The diseases are principally endemic. The most serious trouble is, generally speaking, insufficient care in management, inadequate manuring, bad drainage, acid soil. Diseases of the roots are consequently frequent in all parts.

Before dealing with our chief crops reference will be made to certain Phanerogamic parasites harmful to such permanent crops as coffee, lemon and orange trees, particularly in wet districts. They are : *Loranthus uniflorus, Peperomia nummulariifolia, Tillandsia* spp.

In dry districts trees are often attacked by *Tillandsia utriculata*.

Sugar cane. — Root disease occurs most frequently and is most widespread. It is chiefly caused by *Marasmius Sacchari*, but always in association with other fungi.

The stalks pierced by " borers " are often attacked by *Colletotrichum falcatum*.

Mosaic disease and gummosis both rampant in nearly all the Antilles are as yet unknown in Guadeloupe.

Coffee and Cacao. — These crops are always badly attacked by root diseases (*Rosellinia* spp.) Owners are showing concern, but are

not always taking proper control measures. The disease spreads in patches and chiefly attacks coffee, cacao, inga, avocado pear, lemon trees. It is much the most important coffee disease in Guadeloupe.

Coffee is also attacked by *Cercospora coffeicola, Sphaerella coffeicola, Gloeosporium coffeanum.*

Cacao plants, especially when suddenly exposed, are subject to desiccation of their heads or " Die-back ". Mould of the pods(*Phytophthora Faberi*) and " Anthracnose " are found but do not cause serious damage.

Cotton. — " Angular leaf spot " (*Bacterium* [*Pseudomonas*] *Malvacearum*) and " Rust " (*Kuehneola Gossypii*). are often found, and cause considerable damage.

The drying up of the bolls is fairly general and fairly serious,chiefly in crops attacked by *Dysdercus delauneyi.*

Various Crops. — In one banana crop we noted numerous cases of root rot. The disease seemed to be caused entirely by bad soil conditions, the ground being too clayey and compact.

Gummosis, showing a very abundant secretion, was noted on mahoganies in a public square.

Syria : Experiments on Locust Destruction (1).

The following are the results of locust destruction experiments carried out between 27 March and 2 April, 1927, by means of pyrethrum soap.

No. 1 carried out at Jaadeh in Djezireh.— A plot of land of 50 square metres, containing young locusts aged 24 hours, was sprayed with 5 litres of 2 % pyrethrum soap solution. After 40 minutes 70 % of the insects present on the plot were found to be dead.

As the plot was not isolated it was possible for those coming from neighbouring plots to enter after the spraying.

No. 2. Same locality. — An isolated plot of ground of 150 square metres, containing 5 day old locusts was sprayed with 10 litres of a 3 % pyrethrum soap solution. An hour afterwards 80 % were found to be dead.

No. 3 carried out at Massoudieh in Djezireh. — An isolated plot of ground of 150 square metres containing 7 day old locusts was sprayed with about 12 litres of a 4 % solution of pyrethrum soap.

An hour afterwards 90 % were found to be dead.

No. 4 carried out at Tache Ataene in Chamié. — An isolated plot of ground of 200 square metres, containing 8 day old locusts, was sprayed with 15 litres of a 4 % pyrethrum soap solution. An hour and a half afterwards 70 % were found to be dead.

No. 5. Carried out at El Kobbé, in Djezireh. — An isolated plot of ground of 700 square metres, containing 10 day old locusts, was sprayed with

(1) Communication from the official correspondent to the Institute, Mr. Raphaël HALLAGE, Inspector of the Consultative Commission of Epiphyties attached to the High Commission of the French Republic in Syria and Lebanon, at Damascus.

48 litres of a 5 % pyrethrum soap solution. Half an hour after spraying 95 % were found to be dead.

These various trials took place at different dates at about 6 a. m. at the moment when the young locusts were still torpid from the night cold.

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Between 27 March and 2 April, 1927, trials of locust destruction by means of arsénison were carried out with the following results :—

No. 1 carried out at El Kobbé, in Djezireh. — A plot of ground containing 3 days old locusts was sprinkled with about 1 kg. of arsénison. The operation took place about 5 p. m. At 8 a. m. the next day the plot was seen to contain large numbers of dead red-coloured locusts.

As the trial plot bounded an area containing young locusts, which could pass on to the plot, no mortality percentage could be established.

No. 2. carried out at Jaadeh, in Djezireh. — An isolated plot of 250 square metres, containing 8 day old locusts, was sprinkled with 1 ½ kgs. arsénison at 8 a. m. Twenty four hours afterwards not a single live insect could be discovered : mortality 100 %.

No. 3. carried out at El Kobbé in Djezireh. — On 29 March a quantity of arsénison less than 1 kg. was sprinkled on the track followed by a swarm of 10 day old locusts. At 9 a. m. on the next day there was a heap of dead insects on the track followed by them ; on the day after the number of dead was still greater.

This proves that arsénison can be successfully used on locusts in waterless desert regions.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Tyrol (Austria). — The Law No. 32 of 18 February, 1927, passed by the "Landtag" of the Tyrol came into force on the 8 June, 1927; it regulates the control of diseases and pests of cultivated plants, including weeds but excluding game.

It imposes on owners the duty of taking preventive measures and of employing all means of control at their personal disposal, for keeping their cultivated lands free of diseases and pests and also carrying out, either individually or jointly, all the measures enjoined by the authorities for protection of plants.

Owners are also obliged to report immediately to the competent authorities the appearance of every disease or pest, to furnish accurate information regarding the crops infested and to give free access to their properties to representatives of the authorities, for purposes of inspection and of application of the means of control adopted for the whole Commune.

The Mayor personnally superintends the carrying out of these measures by the owners; he has the right to require the execution of certain obligatory work and to mobilize the members of the community with this object. The mayoralty can fix rewards for the collection of certain pests; such rewards will be paid out of the funds of the community.

The district political authorities are charged with the superintendence of the carrying out of measures for plant protection. They have the right to make obligatory certain preventive measures and certain means of control if the conditions require it. If the infection goes beyond the boundaries of the district, these authorities should make arrangements with the authorities of the neighbouring district for undertaking control in common and, in case of necessity, authorities should inform the central Government.

The Government is empowered, in this case, to take the necessary measures for guaranteeing the execution of the present Law, to issue regulations with respect to it, and especially to establish a control over nurseries, seed stores and other similar establishments which may easily become a source of propagation of diseases and pests. They have further the right of declaring infected districts and lands on which certain diseases and pests have broken out and of prohibiting access to such districts.

The district authorities, in case of urgency, can order the same measures.

Generally, the expenses for the protection of plants must be borne by the owners. The Mayor has the right of levying a contribution towards these expenses on citizens; they have however the right of appeal to the authorities whenever they consider that they are unfairly burdened by sach exactions.

On common property the measures should be carried out by joint action of the community.

Provisions relating to the protection of plants against diseases and pests if involving technical measures should be decreed by the authorities of the district, only after consultation with one or more experts, and the approval of the Tyrol Agricultural Council should be obtained for the carrying into effect of prophylactic measures. Infraction of the Law is punishable by fine up to 200 sch. which, in case of repetition or of aggravating circumstances, may be doubled, or changed to imprisonment for a fortnight to two months.

This Law does not in any way amend the Forest Law of 3 December, 1852 (*R. G. Bl.* Nr. 250) referring to damage caused by insects, nor the existing regulations for grape phylloxera control, nor the general Law of 18 June, 1899 (*L. G. Bl.* Nr. 34) with regard to the protection of birds useful to agriculture.

The Law of 16 May, 1874 (*L. G. Bl.* Nr. 34) relating to the steps to be taken for the protection of field products, fruit trees and vines against harmful insects is at the same time abrogated. (*Landes-Gesetz- und Verordnungsblatt für Tirol*, 8. Juni 1927, Jahrg. 1927, VIII. Stück, S. 55-58).

Scotland. — By Order of the Board of Agriculture for Scotland, for the purpose of preventing the introduction of pests of the elm tree including *Graphium Ulmi* and *Micrococcus Ulmi*, the landing in Scotland from any European country other than England and Wales, Ireland, the Channel Islands and the Isle of Man, of any living elm tree is prohibited from and after 1 February, 1927. (*Statutory Rules and Orders, 1927, No.* $\frac{31}{S.3}$. *Destructive Insect and Pest, Scotland. The Importation of Elm Trees (Prohibition) (Scotland) Order of 1927. Dated January 15, 1927*).

*** By Order of the Board of Agriculture for Scotland, for the purpose of preventing the introduction of the Potato Moth (*Phthorimaea operculella*, Zell.), the landing in Scotland of any potatoes grown in Malta is prohibited unless each consignment is accompanied by a certificate as prescribed in the third Schedule to the Destructive Insects and Pests (Scotland) Order of 1922. (*Statutory Rules and Orders, 1927, No.* $\frac{578}{S.31}$. *Destructive Insect and Pest, Scotland. The Importation of Potatoes (Malta) (Scotland) Order of 1927, Dated June 21, 1927*).

*** By Order of the Board of Agriculture for Scotland, for the purpose of preventing the introduction of the Potato Moth (*Phthorimaea operculella*, Zell.), the landing in Scotland of any potatoes grown in the Canary Islands is prohibited from and after July 1 unless each consignment is accompanied by a certificate as prescribed in the third Schedule to the Destructive Insects and Pests (Scotland) Order of 1922. The Importation of Potatoes (Canary Islands) (Scotland) Order of 1927, dated June 7, 1927 is thereby revoked. (*Statutory Rules and Orders, 1927, No.* $\frac{606}{S.33}$.

Destructive Insect and Pest, Scotland. The Importation of Potatoes (Canary Islands) (Scotland) Order of 1927 (No. 2). Dated July 1, 1927.

France. — The Law of 3 June, 1927, extends to the case of dangerous animals certain provisions of the Law on rural police which relate to crops, and provides in certain cases for the official carrying out of control measures by a " Syndicat de défense ".

Paragraph 1 of article 76 of the Law of 21 July, 1898 (Code rural, livre III, titre 1er, chap. 4) is amended as follows :—

" The Prefects prescribe the necessary measures for checking or preventing damage to crops by insects, cryptogamic parasites and any other injurious animals or plants, whenever such damage assumes or may assume the character of an invasion or pest ".

(The rest of article 76 unchanged).

Article 80 of the Law of 21 June, 1898 (Code rural, livre III, titre 1er, chap. 4) is replaced by the following provisions :—

" When the removal of caterpillars, the destruction of injurious insects, or the destruction of cryptogamic parasites, other injurious animals or plants, has to be effected on property belonging to the State, to Departments or to Communes, and has not been effected within the time prescribed, such operations will be carried out by Order of the Prefect at the expense of the owners ".

The law of 21 June, 1898 on rural police is thus amended :—

" Art. 79 bis. — When the damage to crops, caused by insects, cryptogamic parasites and any other injurious animals or plants, is found to be so serious as to necessitate the employment of urgent measures of general application, the Prefect will, in the region affected, order the destruction of such pests by means of a " Syndicat de défense " constituted under the Law of 21 March, 1920. The " Syndicat " will undertake to act under the technical supervision of the competent Service of the Ministry of Agriculture, and to advance the expenses necessary for the organisation of the control of the pest.

" Whenever a " Syndicat " has been formed the following provisions will be applied :—

" The Minister of Agriculture on the proposal of the Prefect, and after notifying the "Syndicat " and the Director of Agricultural Services, defines, by Decree, the region declared infested.

" When the application, by private owners, of the processes of destruction prescribed by Prefectorial Decree under Art. 76 of the present Law, has not been successful or has not been carried out, the Prefect issues a Decree calling upon and authorizing the " Syndicat" to proceed officially, after the lapse of two clear days, to the work of destroying the parasite within the limits laid down.

" The parties concerned must allow the officers of the "Syndicat " free access to their lands.

" The State, the Departments, Communes, public or private bodies of any kind, are subject to the same obligations as private owners.

" The expenses incurred in the carrying out of these measures, are

divided by the Prefect among the farmers in the same proportion as the land tax on the unbuilt land of each of the parcels cultivated by them and in respect of which the " Syndicat " has taken action.

" The " Syndicat " notifies each farmer of his share of the expenditure.

" In default of payment made directly to the " Syndicat " by the parties concerned within a period of three months, recovery is effected, as in the case of direct taxes, on a list approved and signed by the Prefect ". (*Journal officiel de la République Française*, Paris, 4 juin 1927, LIX^e année, n° 130, p. 5826).

Italy. — By the Ministerial Decree of 15 July, 1927 — the prohibition remaining in force of the importation of potatoes from any country, confirmed by article 8, letter *e*) of the Ministerial Decree of 3 March, 1927, relating to the importation of live plants, parts of plants, seeds and other plant products subject to phytosanitary control (see No. 3 of this periodical) — the importation of potatoes into the Kingdom may be allowed, as an exceptional measure, for the agricultural season of 1927-28, if exclusively intended for use as seed. Power to grant to legally constituted agricultural bodies permission to import seed potatoes is delegated to the Royal Station of Plant Pathology at Rome, which will make the necessary enquiries for ascertaining the health conditions of the potatoes, including the inspection of the crops of origin in situ, will indicate in foreign countries localities from which importation may be allowed, and will fix, in agreement with the Regional phytopathological Observatories of the Kingdom the rules under which the consignments should be admitted by the Customs authorized for importation. (*Gazzetta ufficiale del Regno d'Italia*, Roma, 5 agosto 1927, anno 68°, n. 180, pp. 3179-3180).

*** By Law No. 1272 of 23 June, 1927, the National Institute for Exportation is authorized to institute a national exportation mark for fruit, fresh and dried, citrus fruits and vegetables intended for export.

The actual use of the mark by authorized exporters is subject, *inter alia*, to the condition that, in the case of products submitted to phytosanitary inspection, these shall be found to be perfectly healthy and immune from diseases and pests by the competent delegate of the Service of Plant Protection.

Inspection of goods bearing the mark will be carried out in the Kingdom and abroad, by Inspectors appointed by the National Institute for Exportation. Persons attached to the Service of Phytopathological Inspection, under the Ministry of National Economy, may also act as Inspectors. Such persons, so far as relates to inspection for the purposes of the present Law, will report directly to the National Institute for Exportation. (*Gazzetta ufficiale del Regno d'Italia*, Roma, 6 agosto 1927, anno 68°, n. 181, pp. 3190-3192).

*** Following the presence of grape phylloxera [*Phylloxera vastatrix*] which has been determined in the Communes of Benenello and Verduno in the Province of Cuneo, of Pienza in the Province of Siena, of Argenta, Cento, Portomaggiore and Vigarano in the Province of Ferrara, a Decree of 31 July, 1927 has extended to the area of these Communes the rules contained in artis. 10-14 of the Regulation No. 1099 of 13 June, 1918, relating to the exportation of such materials as are indicated in Nos. 1, 2, 3, and 4 of art. 10 of this Regulation. (*Gazzetta ufficiale del Regno d'Italia*, Roma, 9 agosto 1927, anno 68°, n. 183, p. 3231).

*** A provincial " Federazione di Consorzî " for control of diseases and pests of the olive tree has recently been constituted under the aegis of the local " Cattedra ambulante d'Agricultura " in the province of Grosseto. Control measures against the " olive fly " [*Dacus oleae*] are obligatory for all. (*Rivista di Agricoltura*, Roma, 1927, anno XXXII, n. 28, p. 447).

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parasites of the adult; *Prosena siberita* (Fabricius), *Dexia ventralis* Aldrich, *Campsomeris annulata* (Fabricius), *Tiphia popilliavora* Rohwer, *T. vernalis* Rohwer, *T. koreana* Rohwer, parasites of the larva; *Craspedonotus tibialis* Schaum, predaceous species].

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